MISSION: ALGEBRA™

EDUCATIONAL VALUE:
Solve linear equations, apply the distributive rule, add and subtract constants or variables, multiply and divide by constants, solve for "Y" and plot coordinate pairs on a graph.

Computer Software

By DesignWare®

Master linear equations as you navigate through space with this revolutionary new tool for algebra practice.

COMMODORE 64™ EDITION

For ages 13 and above

MISSION: ALGEBRA™

Computer Software
By DesignWare®

DW109

Mission: Algebra™

Your crippled sister ship is stranded, and you must find her. Determine the flight path of your sister ship, and **learn to solve linear equations.** Mission: Algebra is the comprehensive learning tool you've been waiting for. With the **thousands of linear algebra problems** of varying difficulty levels generated randomly by the program, you will be able to practice solving linear equations until you master the subject.

To discover the path of your sister ship, you must **determine the equations of lines** for trails left by the sister ship. For each line found, you must **solve for "Y"** to determine a point on the flight path. You then move to the screen which displays the stellar map, where you **plot the point** (X,Y coordinate pair). Solve the problems and win points. Occasionally, your navigation computer malfunctions, and you may guess the location of the next point in the path, which adds excitement to the game.

A workspace is provided on the screen for solving the problems presented. With each step you make toward the solution, the **exclusive built-in "Equation Evaluator" provides immediate feedback** on the correctness of each step you take, regardless of the approach you use.

If you have trouble solving any one of the thousands of problems generated by the computer, **three types of help** are available with the press of a key. You can review basic algebra rules with examples at any time. If you're stumped, the computer can suggest the next logical step in the solution to the problem. If you're still having trouble, you can examine a complete step-by-step solution to the problem. You can return to the workspace from the help section at any time and continue solving the problem.

Mission: Algebra provides hours of practice and challenge for algebra students. With **multiple skill levels** built into the program, you can start with simple linear equations and advance to more complex ones when you're ready. Problems include practice in applying the distributive rule, adding and subtracting a constant or a variable to both sides of an equation and multiplying and dividing by a constant.

To increase the game challenge, you can also **select different paths** to navigate. Forty paths are supplied in the program. You can also **design and save your own paths,** and the computer will generate new problems for you to solve based on these paths.

For ages 13 and above.

System Requirements:

- Computer memory required:
  - Apple® *II* computers: 48K
  - Commodore 64™ computer: 64K
  - IBM® PC/PCjr computers: 64K
- Disk drive

About The Author

Based in San Francisco, DesignWare is a leading developer of many of the nation's best selling learning programs, including Facemaker*, Story Machine* and Spellicopter.

Every DesignWare program is developed by educational experts and tested by parents, teachers and kids to ensure it is educationally sound, fun and easy to use.

DesignWare has been developing learning products for more than four years with a team of specialists in education, writing, instructional design, graphic arts and computer programming. DesignWare has developed products for many of the nation's leading publishers, including D.C. Heath & Co., Harper & Row, Harcourt Brace Jovanovich, Reader's Digest, SRA, Inc., and many others.

You don't even need to read the manual to get started using a DesignWare program, because a built-in demonstration that explains how to use it is included in every program. The printed material accompanying every program includes a section for parents on the learning value of the program, provides information on program uses and suggests additional learning activities.

An exciting feature of DesignWare programs is their versatility. You can select from multiple skill levels. Plus you can add your own problems or words to most DesignWare programs, making them an ideal way for practicing schoolwork and areas of special interest to your children.

Look for other DesignWare programs wherever software programs are sold.

Creature Creator™: Computer literacy and pattern matching game. For ages 4 to 8.

Crypto Cube™: Family word game. For ages 8 and above.

The Grammar Examiner™: Family grammar game. For ages 10 and above.

Math Maze™: Math facts game. For ages 6 to 11.

The Notable Phantom™: Game for learning musical note names and positions on a musical staff and piano keyboard. For ages 5 to 10. Includes an exclusive piano keyboard overlay.

Spellagraph®: Picture puzzle game for practicing spelling and word comprehension. For ages 7 to 14.

Spellakazam™: Action spelling game. For ages 7 to 11.

Spellicopter®: Action spelling game. For ages 6 to 10.

States & Traits™: Family game for learning historical and current state facts, geographical landmarks, and names and locations of states and capitals. For ages 9 and above.

Trap-A-Zoid®: Geometry concepts game. For ages 7 to 14.

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MISSION: ALGEBRA™

DesignWare®

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San Francisco, CA 94107
Toll Free: **800-572-7767**
In California call collect: **415-546-1866**

Written in MicroMotion FORTH-79.

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San Francisco, CA

Customer Support

If you have any questions about using **Mission: Algebra**, call the Design-Ware Hotline. For customers outside California, the toll free number is **800-572-7767**. Residents of California, call **(415) 546-1866** collect.

Note to Parents

Algebra in the Math Curriculum

It is in the beginning algebra class that students move from computational arithmetic to higher-level, more abstract mathematics. Linear equations are one of the basic mathematical building blocks taught in beginning algebra. Mission: Algebra *is a program that helps students practice solving linear equations.*

The Target User

This program is not a tutorial. It provides an environment to practice solving linear equations with "help" available. The student who is ready to use this program has already been introduced to working with negative numbers, using variables (X and Y), combining like terms, the distributive axiom, multiplicaton and division rules, factoring, and graphing ordered pairs of numbers in a coordinate plane (including plotting points and drawing a line on a graph).

The student need not have mastered all of the above concepts, but should have been introduced to them. The simplest way to see if your child is ready for this program is to turn to some of the sample screens or algebra guidelines in the back of the manual and ask if he or she is doing that kind of problem at school. Another good way is to ask your child's math teacher's opinion.

What is Special About This Program?

- *The educational and game activities are so well integrated that there is virtually no difference between them.*
- *There are literally thousands of problems to be solved. This is because problems are generated by the computer, not stored.*
- *Three kinds of help are available. All can be accessed when the student is in the middle of a problem – without losing the work on the problem. The first kind of help is algebra rules similar to what is in the back of this manual. The most frequently used help is the computer's hint about the next step in solving the problem. A "last resort" help is a step-by-step solution to the problem.*
- *This sophisticated program allows students to solve problems using virtually any approach. This is an important and unusual quality. Many programs on the market today can offer help only because they force students into a particular method of solving problems.*
- *A wide range of problems is available. The program generates equations as simple as $Y + 5 = 4X - 6$ and as complex as $5Y + 23 = 5(-1X + 13) - 7$.*
- *The students can modify the game themselves.*

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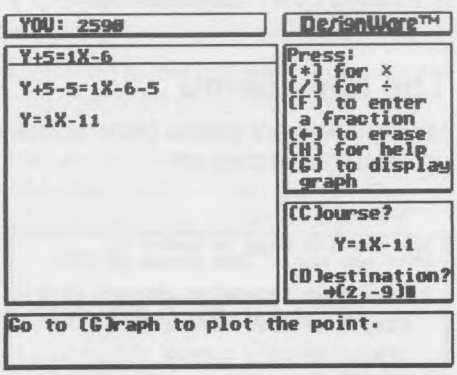
About the Game

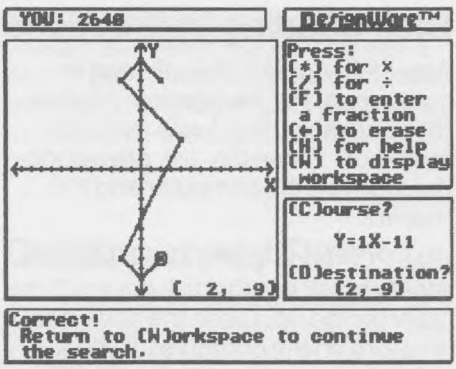
How the Game is Played

You're cruising in your space ship, minding your own business, when you receive a message that sends chills down your spine: your sister ship is disabled and it's up to you to find and rescue her. If you could establish communication, it would be easy, but that last radiation belt completely zapped their instruments, and your own equipment is under the same foul threat. You find yourself forced to retrace the path using the most primitive of tools: your brain. It's a good thing you've studied your algebra.

Mission: Algebra is a game that makes algebra fun. First, you find the slope of the sister ship's path by simplifying a linear equation. Then, you discover exactly where the ship changed direction by solving for **Y**. Sometimes you get to guess where the next change of direction will be. As you plot the points on your graph, a pattern starts to emerge, until at last you locate the disabled ship!



1. Mission: Algebra – Equation Screen



2. Mission: Algebra – Graph Screen

The Terms in this Manual

This manual often refers to the RETURN and ESC keys. If your computer doesn't have these keys, use the corresponding buttons on your machine. (For IBM, use the ENTER and ESC keys; for Commodore® 64, use the RETURN and f1 keys.)

In **Mission: Algebra**, the cursor takes the form of an arrow or a circle that you can move around the screen. "Arrow keys" are the keys that move your cursor. You may also use your I-J-K-M keys (I-up, J-left, K-right, M-down). Whenever you can't use the arrow or I-J-K-M keys as you normally would, the screen tells you which keys to use.

Commodore® 64 users: You can use your left and up arrow keys or your I-J-K-M keys or your down and right cursor (CRSR) keys without pressing another key. If you use your cursor keys to go up and left, however, you must also press SHIFT – but not SHIFT LOCK. When the manual refers to the ESC key, use your f1 key.

Disk Loading Instructions

Apple® II, Apple II Plus, IIe and IIc computers: Put the **Mission: Algebra** disk into disk drive 1 with the label facing up. Close the disk drive door; then turn on the computer and the monitor.

IBM-PC® and PCjr®: Put the **Mission: Algebra** disk into the disk drive with the label facing up. Close the drive door and turn on the computer. If you are using this program with the IBM PC, a Color/Graphics Monitor Adapter is required. It will not work with the IBM monochrome monitor.

Atari® 400, 800, 1200XL computers: Remove the BASIC cartridge. Then turn on the disk drive. When the top red light (the "BUSY" light) goes out, open the disk drive door. Insert the **Mission: Algebra** disk with the label facing up and close the disk drive door. Turn on the computer and the monitor.

Atari® 600XL (48K), 800XL and other Atari XL computers with built-in BASIC: Turn on the disk drive first. When the top red light (the "BUSY" light) goes out, open the disk drive door. Insert the **Mission: Algebra** disk with the label facing up and close the disk drive door. Hold down the OPTION key. Turn on the computer and the monitor.

Commodore® 64: Turn on the disk drive first. Then turn on the computer and the monitor. Put the game disk into disk drive 1 with the label facing up. Close the drive door. When the word READY appears on the screen, type the following:

LOAD"*",8

Then press RETURN. A message tells you the computer is searching for a program. When the word "READY" appears, type RUN and press RETURN to load the program. This is a large, complex program that takes a few minutes to load.

Is everything loaded? Now the program starts automatically. Wait a few seconds for the title page to appear. To skip the title page, press ESC or any other key. This takes you directly to the *Main Menu*.

If you don't press ESC, you'll see a demonstration of how the game is played. To go through it faster, press RETURN. To go directly to the *Main Menu*, press ESC.

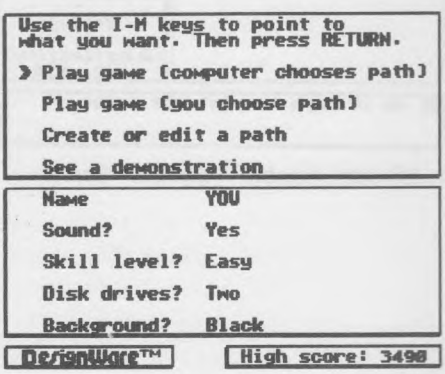
The Flashing Disk

A small picture of a disk sometimes flashes on the bottom right corner of the screen. This lets you know when the computer is getting information from the disk. You cannot continue until the disk disappears.

3. Flashing Disk

The Main Menu

Mission: Algebra's *Main Menu* shows you your game choices.


Use the I-M keys to point to what you want. Then press RETURN.
> Play game (computer chooses path)
Play game (you choose path)
Create or edit a path
See a demonstration
Name YOU
Sound? Yes
Skill level? Easy
Disk drives? Two
Background? Black
DesignWare™
High score: 3490

4. Main Menu

The Demonstration

If you want a quick demonstration of the **Mission: Algebra** program, use your arrow or I-J-K-M keys to move the arrow to the ***See a demonstration*** setting. Press RETURN. The demo shows you how the game is played. (This is the same demo that appears when you first load the program.) To go through it faster, keep pressing RETURN. The demo continues until you press ESC. This takes you to the ***Main Menu***. If you're ready to play the game, move the arrow to ***Play game (computer chooses path)*** or ***Play game (you choose path)*** and press RETURN.

The Game Settings

At the bottom of the ***Main Menu*** is a list of game settings. These are your choices:

- Name (You/A name with up to 12 letters)
- Sound (Yes/No)
- Skill Level? (Easy/Hard)
- Disk drives? (One/Two)
- Background? (Black/White)

Move the arrow to a setting you want to change; then press RETURN. When you're ready to play the game, move the arrow to ***Play game (computer chooses path)*** or ***Play game (you choose path)*** and press RETURN.

Choose a Skill Level

It's possible to vary the difficulty of the game by changing the skill level on the ***Main Menu***. Problems at the easy skill level are simpler than at the hard level; they use the Algebraic Rules less often. (To see the rules, refer to the section in this manual on **Algebraic Rules**.) At the easy level, you also learn the value of X at the start of the problem instead of in the middle.

You may also add to the game's interest and length by playing with a secret path (chosen by the computer) or by choosing a complex path (as indicated by the higher numbers on the path list).

Quitting at Any Time

You may quit or leave any section of the program by pressing the ESC key. This generally takes you to the previous menu.

Commodore 64 users quit a game or return to the ***Main Menu*** by pressing the f1 key. Whenever this manual says to press ESC, Commodore 64 users should use the f1 key.

Path Choices

Before playing **Mission: Algebra**, you choose between a built-in path on the Master Disk and one you've created and stored on your own Data Disk. (To learn how to create a path, refer to **Creating Your Own Games**.) You also choose between a path the computer selects at random and a path you pick from a list.

Computer Chooses a Path

To play with a path chosen at random by the computer, leave the arrow on *Play game (computer chooses path)* and press RETURN.

- **One disk drive** – The program tells you to insert the disk with the paths you want to use. To play with a built-in path, leave the Master Disk in the drive and press RETURN. The first game screen appears.

  To play with a path you've stored on a Data Disk, remove the Master Disk and replace it with your Data Disk. Press RETURN. Now put the Master Disk back in the drive and press RETURN. The first game screen appears.

- **Two disk drives** – The program asks which drive holds the disk you want to use. To play with a built-in path, leave the Master Disk in drive 1 and press **1**. The first game screen appears. To play with a path you've stored, make sure the Data Disk is in drive 2 and press **2**. The first game screen appears.

You Choose a Path

If you want to select a specific game path, move the arrow to ***Play game (you choose a path)*** and press RETURN.

- **One disk drive** – The program asks you to put the disk with the path you want into drive 1. To play with a path built into the program, leave the Master Disk in the drive and press RETURN. A list of the built-in paths appears. Move the arrow to the name of the path you want and press RETURN. The first game screen appears.

```
>DIAMOND        ( 5)   PERSIAN CAT   (10)
 ARROW          ( 5)   SPIRAL        (11)
 PIXIE          ( 5)   RAY           (11)
 MONOLITH       ( 5)   MANTIS        (11)
 LIGHTNING      ( 6)   COMET         (13)
 INFINITY       ( 7)   ZIPPER        (13)
 HEART          ( 7)   DART          (13)
 PIPE           ( 7)   DONKEY        (13)
 V              ( 7)   BOXER         (13)
 NECKTIE        ( 7)   X             (13)
 BOWTIE         ( 7)   SPIDER        (15)
 HAT            ( 7)   BUTTERFLY     (17)
 SPEAR          ( 8)   RABBIT        (17)
 PAPER CLIP     ( 8)   JET           (17)
 PIGEON         ( 9)   SPRING       (17)
 HAMMER         ( 9)   WOW!          (17)
 QUAD PEAKS     ( 9)   BIRD          (19)
 TADPOLE        ( 9)   LOBSTER       (19)
 CATHEDRAL      ( 9)   UMBRELLA      (19)
 STARFISH       ( 9)   TURTLE        (19)

SPACE BAR to see paths from drive 2.
Use the I-J-K-M keys to move around;
RETURN to select path; ESCAPE to exit.
```

5. List of Built-in Game Paths

  To play with the paths stored on a Data Disk, remove the Master Disk from drive 1 and insert the Data Disk. Press RETURN. A list of your stored paths appears. Move the arrow to the name of the path you want and press RETURN. Now remove the Data Disk from drive 1, replace it with the Master Disk, and press RETURN. The first game screen appears.

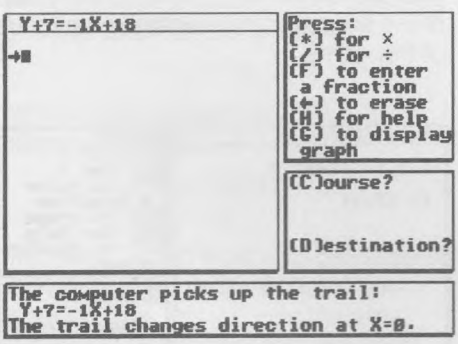
- **Two disk drives** – The list of the built-in game paths automatically appears on the screen. To play with one of these paths, move the arrow to the name of the path and press RETURN. The first game screen appears.

  To play with a path you've stored on a Data Disk, first make sure your Data Disk is in drive 2. When you see

the list of the Master Disk's built-in paths, press the SPACE BAR. The list of your stored paths appears. To play with one of them, move the arrow to the name of the path you want and press RETURN. The first game screen appears. (Instead of pressing RETURN, you can press the SPACE BAR again to go back to the Master Disk list.)

Simplify the Equation

The game begins with a screen that looks like this:



6. First Game Screen

This is the Workspace screen. At the top of the screen is a linear equation that represents the general path of the sister ship. Your first mission is to simplify it as much as possible. The best way to do this is to reduce it so **Y** stands alone on one side of the equation.

Type your steps as if you were using a piece of paper. For example, if the equation is. . .

$$Y + 7 = -1X + 18$$

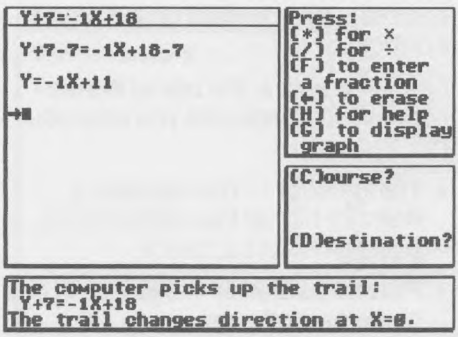
you might type it like this:

$$Y + 7 - 7 = -1X + 18 - 7$$

(Press RETURN)

$$Y = -1X + 11$$

(Press RETURN)



7. Equation Screen with Calculations

When typing your equation, use these symbols on your keyboard:

- Arrow or DELETE key to make corrections.
- The * sign to type a multiplication (X) sign.
- The / sign to type a division sign (÷).
- The letter **F** before typing a fraction. After you press **F**, you'll see this:

Type the numerator first. . .

and then the denominator. . .

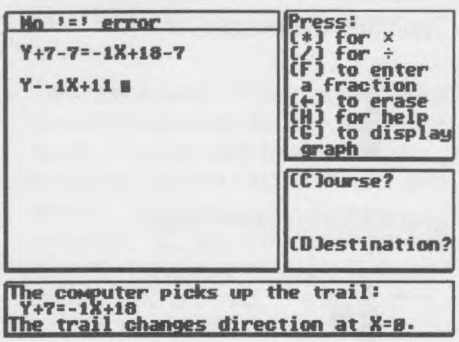
After you've typed each step of the equation, press RETURN. If your entry is right, the program sounds a "fanfare." The cursor moves down to the next line, so you can type the next step in your equation.

If you've made a mistake, the program

buzzes, and you must go back and correct it.

For some errors, the box at the top of the Workspace tells you what you did wrong:

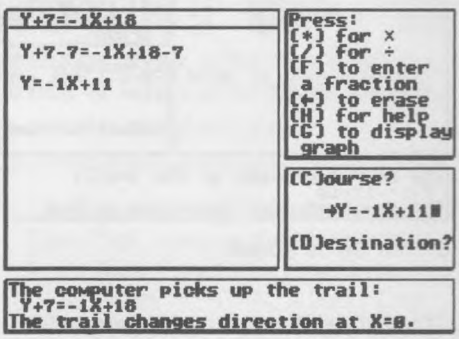
- **Range error** – You've typed a number higher than 255 and the program won't accept it.
- **Parenthesis error** – You left out one of the parentheses.
- **Operator error** – You typed the wrong math symbol.
- **No '=' error** – You left out the equals (=) sign.
- **Syntax error** – The computer doesn't understand what you've typed.
- **Division by 0 error** – You've tried to multiply or divide by zero (0). If you divided by X or Y, this *might* indicate that Y = 0 or X = 0.
- **Wrong form error** – The equation has not been reduced to its correct form.



8. Error Message

When you run out of room for your calculations, you'll notice that the lines roll up to give you more room. As they do this, the first lines you typed disappear from the screen. To review calculations that are no longer in view, use your I and M keys or your **up** and **down** arrow keys to scroll up and down in the Workspace. Your computer remembers about two screens of calculations.

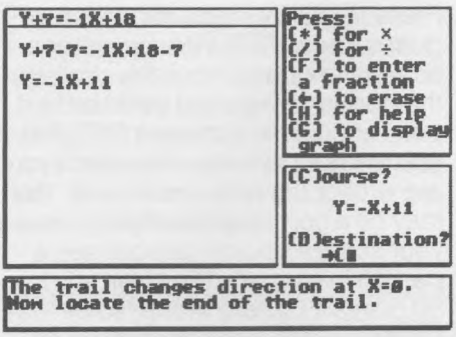
When you have reduced the equation to its simplest form, press **C** (for Course) and retype the final equation. Notice that the numbers appear under **(C)course** on the middle right side of your screen. Press RETURN. If the equation you type has an error, the buzzer sounds and an error message may appear. Go back and correct the mistake. If you type the equation correctly, you hear the fanfare and your bonus points are totaled at the top of the screen. Continue to the next part of the game.



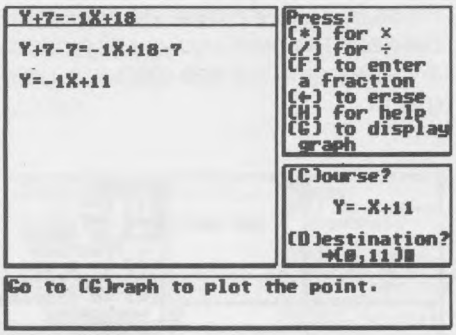
9. (C)ourse Entry

Solve for Y

Now you must calculate Y to determine where the sister ship changed course. To do this, press **D** (for Destination). An opening parenthesis appears under the word (D)estination. Notice that the message at the bottom of the screen tells you the value of X.



10. (D)estination – Parenthesis Appears



11. (D)estination Entry

You can find out what **Y** is by using a calculation that substitutes the X value for the X. For example, if the equation you typed under (C)ourse is. . .

$$Y = -1X + 11$$

and X = 0, you can find the Y coordinate this way. . .

$$Y = 0 + 11$$
$$Y = 11$$

If it helps you to type your calculations on the screen, press **W** (for Workspace). This lets you use the area where you simplified your equation. When you're ready to enter the X and Y coordinates, press **D** again and type them in this form:

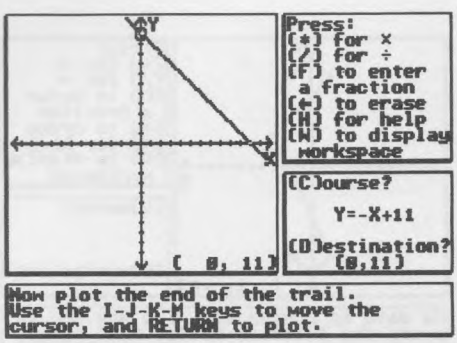
(X coordinate, Y coordinate)
or
(0, 11).

The program automatically inserts the second parenthesis when you press RETURN.

If you're right, you hear the fanfare. If you're wrong, the program buzzes, and you can try again.

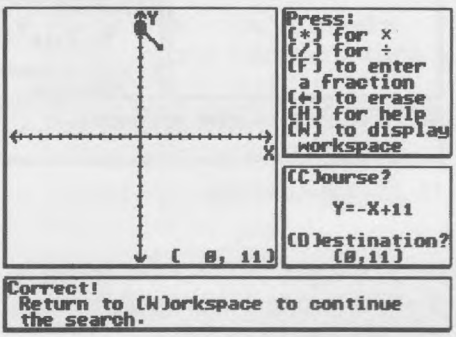
Plot the Graph

Next, plot your graph. This will eventually give you a picture of the sister ship's path. To do this, press G (for Graph). The X and Y axes appear, with a slanted line that represents the linear equation you've just solved. Move the circle toward the position that represents the coordinates you calculated. Notice that the numbers on the graph change to show where you are. You know you've reached the correct position when those numbers match the coordinates you typed under (D)estination.



12. Plotting the Graph

Press RETURN. A new line appears between the point you've just plotted and the point that was already on the graph.



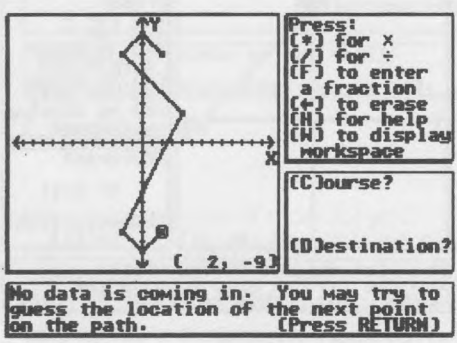
13. Point Plotted on Graph

Return to Workspace

It's now time to return to the Workspace to simplify and solve another equation. Press **W** (for Workspace). Usually, the program will give you the next linear equation in the upper left corner. Repeat the steps for simplifying an equation, solving for Y, and plotting a point on the graph.

Guessing Opportunities

When you press W (for Workspace), the program sometimes gives you a chance to guess the next point.



14. Guess a Point Screen

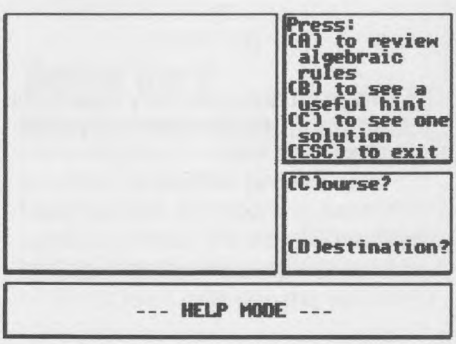
Press RETURN. If you don't want to guess, press RETURN again. If you **do** want to guess, move the circle to the position where you think the next point should be and press RETURN. If you are right, a fanfare sounds; if you are wrong, the program buzzes. This may be a good opportunity to increase your score if you can already see a pattern in the path. However, you lose 50 points if you are wrong, so be reasonably sure before guessing. To continue the game, press W (for Workspace).

Getting Help

The program emits a variety of beeps and buzzes to let you know when you've made a mistake or typed a correct entry. Sometimes an error message lets you know exactly what you've done wrong.

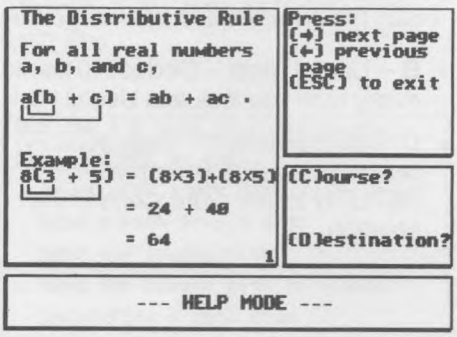
The program also offers more extensive advice. If a problem has you stumped, you can ask the program for help by pressing *H* (for Help). Every time you do this, however, points are deducted from your bonus. (See **Scoring**.)

You can ask for three kinds of help:



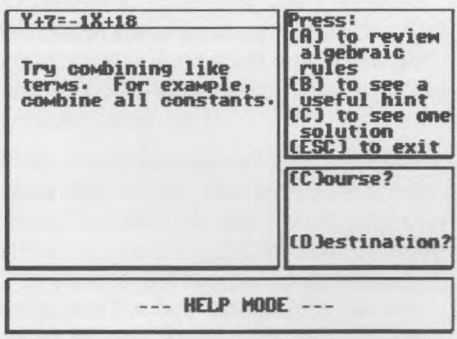
15. Help Menu

Press *A* for an Algebra Review. A screen appears with some basic algebra rules, including examples. Use the arrow keys to move backwards and forwards in the rules until you come to the one that fits your situation. When finished, press ESC to go back to the *Help* menu.



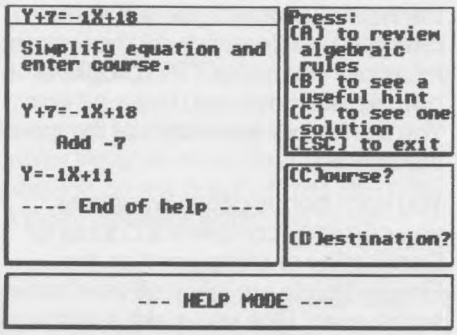
16. A – Algebra Review, First Page

Press *B* to see a Useful Hint. The program will suggest the next step for your particular problem. The *Help* menu stays on the screen.



17. B. – Useful Hints

Press *C* to see one solution. To see the first step in a solution to your problem, press RETURN. If you don't need any more help, press ESC to go back to the *Help* menu. If you do need more help, press RETURN again. You can continue to press RETURN until the message says "End of Help." At this time, the *Help* menu is back on the screen.



18. C. – One Solution

When you have gotten all the help you need, you can go from the Help mode to the game by pressing ESC. This takes you back to the problem you were solving.

Once you've solved the Course for any given equation, the program won't be able to show you a Solution. Once you've solved the Destination, the program won't be able to show you a Useful Hint.

Scoring

Since this game is set up for just one player, you are really competing against your previous scores. The number of points you earn depends on the type of problem you solve, how often you ask for help, and how many mistakes you make. (The program buzzes whenever you make an error.) You'll find your total score at the top of the screen.

You earn bonus points whenever you correctly complete a Course or Destination or plot a point on the Graph. Points are taken off your bonus score every time you make a mistake or ask for help.

Course Score

You earn 300 bonus points for simplifying an equation and correctly entering it under (C)ourse – minus 10 points for each error.

Destination Score

You earn 100 bonus points for calculating the (X,Y) coordinates and correctly entering them under (D)estination – minus 10 points for each error.

Graph Score

You earn 50 points for correctly plotting the graph – minus 10 points for each error.

Score for Correct Guess

You earn 600 points for correctly guessing the next point on the graph. Fifty (50) points are deducted from your previous score if your guess is wrong.

Penalties for Help

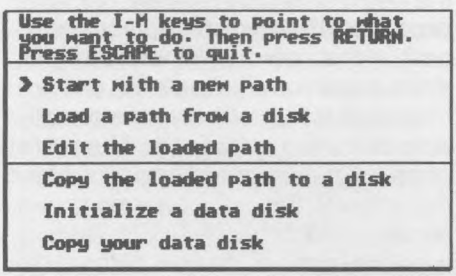
Your bonus is reduced by 10 points whenever you ask the program for help. This amount is deducted after you solve the problem. This is how it works:

- A – Algebraic Rules – Deduct 10 points every time you look at the rules, no matter how many "pages" you scroll.
- B – Useful Hints – Deduct 10 points every time you look at a Useful Hint.
- C – One Solution – Deduct 10 points every time you press RETURN to see more steps in the solution.

Creating Your Own Games

This program allows you to create your own game paths. You can design a path with up to 20 points (or 19 lines). When you play the game with that path, the program automatically generates equations based on the lines you've drawn.

To create or edit a path, move the arrow to the ***Create or edit a path*** setting (on the ***Main Menu***) and press RETURN.


Use the I-M keys to point to what you want to do. Then press RETURN. Press ESCAPE to quit.
> Start with a new path
Load a path from a disk
Edit the loaded path
Copy the loaded path to a disk
Initialize a data disk
Copy your data disk

19. Create or Edit a Path Menu

Initialize a Data Disk

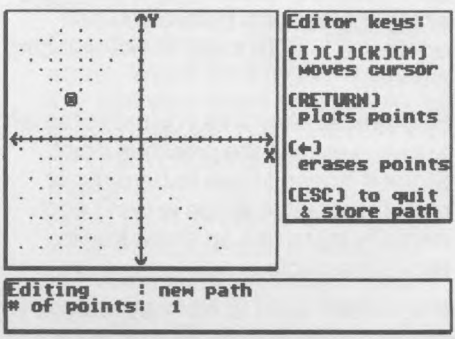
Before you begin creating **Mission: Algebra** paths, prepare another disk to store them. To do this, you'll need to initialize one of your own disks or a disk containing information you no longer want. (You only need to go through this procedure once.)

First, move the arrow to the ***Initialize a data disk*** setting and press RETURN. Insert the disk you want to initialize into drive 1 (if you've got one drive) or drive 2 (if you've got two drives and have selected the two-drive option on the ***Main Menu***). Press RETURN. The program warns you that any information on this disk will be destroyed. If this is all right with you, press RETURN. (If you change your mind, press ESC.)

Wait a few minutes while the disk is being initialized. When it's ready, the ***Create or edit a path*** menu reappears. Your Data Disk is now ready to store the game paths you create.

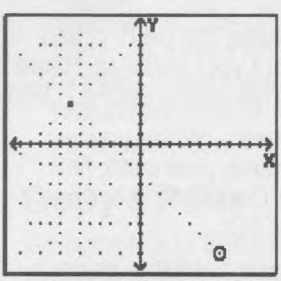
Create a New Path

To create a new path, make sure the arrow is on ***Start with a new path*** and press RETURN. The screen shows the X and Y axes. To plot your first point, use your I-J-K-M keys (but not your arrow keys) to move the circle to any position on the graph. Press RETURN. A point appears within the circle.



20. New Point Placed on Graph

Notice the fine dot pattern that now appears on the screen. You must place your next point over one of these dots. You won't be able to place a point anywhere else.



21. Circle Over Dot

To place your second point, move the circle over a dot. Press RETURN. The second point appears and another dot pattern forms on the graph. Notice also, that a line now connects the first two points. Continue placing points this way until you've finished making your path.

To erase a point you've just placed, press your **left** arrow key. If you wish to erase a point in the middle of your path, you must work your way back towards the beginning. In other words, you must erase the third dot before you can erase the second, and you must erase the second before you can erase the first. (It's sort of like unlacing a shoe.)

Remember: Any time you press the left arrow, it erases the previous point. Since it doesn't have to be directly over the point to erase it, don't accidentally try to use an arrow key to move the circle.

If you don't want to store a path you've made, press ESC twice. If you want to save it for future play, follow the procedure for storing a path (below).

Store a Path

The program prompts you to store any new path with two or more points. That way you can play with it in the future.

- **One disk drive** – When you've finished creating the path, press ESC. Then put your initialized Data Disk in the drive and press RETURN.
- **Two disk drives** – When you've finished creating your path, first make sure a Data Disk is in drive 2. Then press ESC.

If you have space available on your Data Disk, the program immediately asks you to type the path's name. Type a name of up to 12 letters (including spaces). If you make a mistake, use the DELETE or arrow keys to go back and make corrections. Press RETURN. The path is now stored in your Data Disk.

22. Type Name of Path Screen

Once you've stored 40 game paths, the path list is full. However, the program allows you to replace an old path with a new one. When you try to store a path on a full path list, a message tells you there are no available slots. Press RETURN. The full list of paths you've stored appears. Move the arrow to the path you want to replace and press RETURN. Then type the name of the new path you're storing and press RETURN. The old path is now replaced by the new path.

If you don't want to lose any of your old paths, you can also store new paths on a second initialized Data Disk.

Edit a Path

To change a path that has already been created, you must "load" it, make your changes, and store it. (Loading brings the path into the computer's memory so you can make changes to it.) To load a path, move the arrow to the ***Load a path from a disk*** setting and press RETURN.

- **One disk drive** – If you want to edit a built-in path, leave the Master Disk in the drive and press RETURN. To change a path you've created and stored, put your Data Disk in the drive and press RETURN.
- **Two disk drives** – The computer asks which drive has the path you want to load. To load one of the built-

in paths on the Master Disk, type *1*. To load one of your own paths, make sure your Data Disk is in drive 2 and press *2*. Then press RETURN.

When the list of paths appears on the screen, move the arrow to the path you want and press RETURN. This takes you to the ***Create or edit a path*** menu. Move the arrow to ***Edit the loaded path*** and press RETURN.

The path you just loaded appears on the screen. Notice that the circle is directly over the final point on the graph. When you press the left arrow key, both the point under the circle and the line connecting it to the previous point disappear. The circle then moves to the previous point. A new dot pattern appears. To place a new point, move the circle over a dot in the pattern and press RETURN.

Remember: You can erase and add points only in the reverse order in which they were placed. You cannot go to the middle of the graph and erase or add a point.

When you've finished editing your path, press ESC. If you haven't made any changes, the program returns directly to the ***Create or edit a path*** menu. If you have made changes, the program asks you to type in a name for your path. To store the revised graph, type a name and press RETURN. (If you press ESC instead of typing the path name, the original path remains in the program.)

Note: As long as your Data Disk still has "path slots" available, both the original and the revised game paths remain on the Data Disk. When all the slots have been taken, however, you may have to replace an old path with a new one. (You may also store them on a second initialized Data Disk.)

Copy a Disk

It is possible to copy the information you've stored on one Data Disk onto a second Data Disk. To do this, make sure you have a blank or reusable disk, and that your Data Disk has a write-protect tab on it. (If you want to copy the built-in paths on your Master Disk, insert the Master Disk in the drive when the program says to insert the Data Disk.)

From the ***Main Menu***, go to ***Create or edit a path*** and press RETURN. Move the arrow to ***Copy your data disk***. Press RETURN.

- **One disk drive** – Press RETURN again. When the program requests it, insert your blank or reusable disk in the drive and press RETURN. The program cautions you that the information on the disk will be destroyed. Press RETURN to continue. Wait while the blank disk is initialized. Insert the Data Disk when the program requests it. You'll have to swap your Data Disk and the "blank" disk several times. When the program requests it, put the Master Disk in the drive and press RETURN. The Data Disk is now copied.
- **Two disk drives** – Make sure the Data Disk is in drive 1 and the blank or reusable disk is in drive 2. Press RETURN. The program cautions you that all the information on the disk in drive 2 will be destroyed. To continue, press RETURN. When the ***Create or edit a game path*** menu reappears, your disk is copied.

Copy a Path

It's possible to transfer individual paths to another Data Disk by "loading" a path from one disk and storing it on the other. You may also copy paths from the Master Disk onto a Data Disk;

however, you may not copy a path from a Data Disk onto the Master Disk.

- **One disk drive** – To load a path, move the arrow to ***Load a path from a disk*** (on the ***Create or edit game path*** menu). Press RETURN. To load a built-in path, leave the Master Disk in the drive. To load one of your own game paths, remove the Master Disk from the drive and put in the Data Disk. Press RETURN. When the list of paths appears, move the arrow to the name of the one you want and press RETURN. You'll find yourself back on the ***Create or edit a game path*** menu.

  Now move the arrow to ***Copy a loaded path to disk*** and press RETURN. Replace the disk that contains the path you loaded with a disk that can "accept" that path. Press RETURN. Type the name of the path you are copying and press RETURN again. The path is now copied onto the second disk.

- **Two disk drives** – To load path, move the arrow to ***Load a path from a disk*** (on the ***Create or edit a game path*** menu). Press RETURN. The program asks which drive holds the disk you want to copy. Type ***1*** or ***2***. That disk's list of paths appears on the screen. Move the arrow to the name of the path you want to copy, and press RETURN. You'll find yourself back on the ***Create or edit a game path*** menu.

  Now move the arrow to the ***Copy the loaded path to a disk*** setting and press RETURN. Make sure the disk that will accept the path is in drive 2. (You may have to take out one Data Disk and put in the other.) Press RETURN. Type the name of the path when the program requests it. Press RETURN. The path is now copied onto the second disk.

Algebraic Rules

The Distributive Rule

For all real numbers a, b, and c:

$$a(b + c) = ab + ac$$

Example:

$$\begin{aligned} 8(3 + 5) &= (8 \times 3) + (8 \times 5) \\ &= 24 + 40 \\ &= 64 \end{aligned}$$

Factoring

To factor polynomials, use the distributive rule in reverse.

Example:

$$\begin{aligned} 8 + 12X + 5X &= 8 + X(12 + 5) \\ &= 8 + X(17) \\ &= 8 + 17X \end{aligned}$$

Adding Constants

Add the same nonzero number to each side of a given equation.

Example:

$$\begin{aligned} X + 7 &= 19 \\ X + 7 + (-7) &= 19 + (-7) \\ X &= 12 \end{aligned}$$

Multiplication and Division

Multiply or divide each side of an equation by the same nonzero number.

Example:

$$\begin{aligned} 2Y &= 9 \\ 3(2Y) &= 3(9) \\ 6Y &= 27 \end{aligned}$$

The Reciprocals

For every nonzero number a, there is a number 1/a such that $a \times 1/a = 1$.

Example:

$$\begin{aligned} 7Y &= 56 \\ 1/7(7Y) &= 1/7(56) \\ Y &= 8 \end{aligned}$$

Several Transformations

Example:

$$\begin{aligned} 5X - 3X + 4 &= 12 \\ (5-3)X + 4 &= 12 \\ 2X + 4 &= 12 \\ 2X + 4 - 4 &= 12 - 4 \\ 2X &= 8 \\ 1/2(2X) &= 1/2(8) \\ X &= 4 \end{aligned}$$

Glossary

Constant
A constant is any number.

Distributive Rule
For all real numbers a, b, and c: $a(b + c) = ab + ac$.

Equation
An equation is a statement that contains an equals sign (=) between two algebraic expressions.

Factor
For a given expression, factors are the set of monomials that, when multiplied together, result in that expression. The numbers 2 and 7 are the factors of 14. The number 2 and the variable X are the factors of 2X.

Like Terms
Like terms are monomials that differ only in their numerical coefficients. For example, 4X and 17X are like terms, and 12 and 4 are like terms. However, 4X and 7Y are not like terms.

Monomial
Monomials are numerals, variables, or a product of a numeral and variables. For example, 4X, 4, and 4XY are all monomials, but 4X + Y is not a monomial.

Polynomials
A polynomial is a sum of monomials, such as 4 + 3X − 11Y.

Reciprocals
The reciprocal of a nonzero real number *a* is the number 1/a, in which a x 1/a = 1. For example, the reciprocal of 4 is 1/4.

Simplify an Equation
Rewrite an algebraic expression in its simplest form.

Transformations
Transformations are changes to an equation that produce an equivalent equation.

This includes the following:

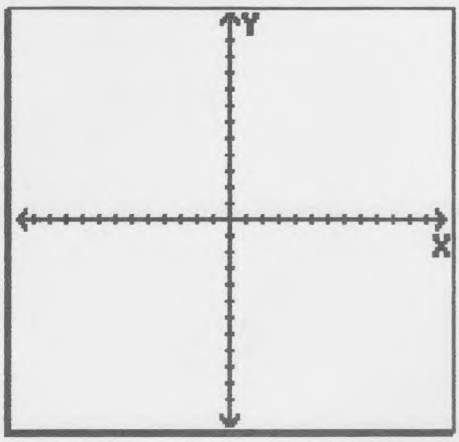
- Adding the same number to each side of an equation,
- Subtracting the same number from each side of an equation,
- Dividing each member of an equation by the same nonzero number,
- Multiplying each member of an equation by the same number, or
- Substituting an equal expression for any expression of an equation.

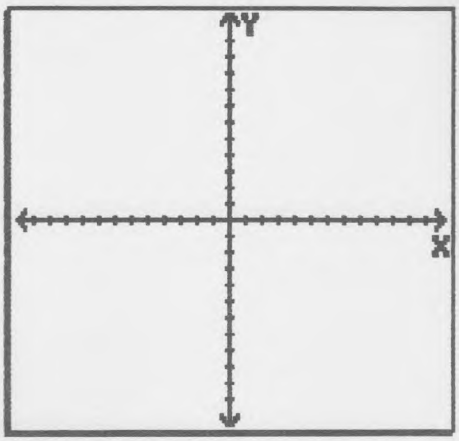
Algebra Rules I Need to Know

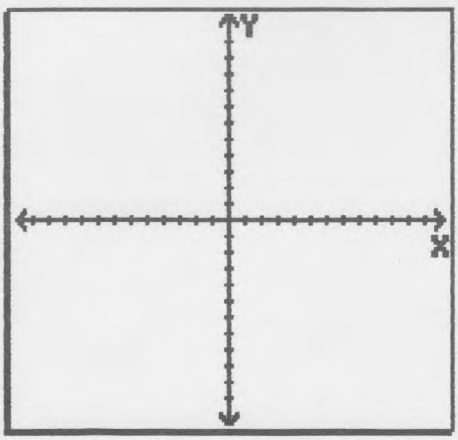
Algebra Rules I Need to Know

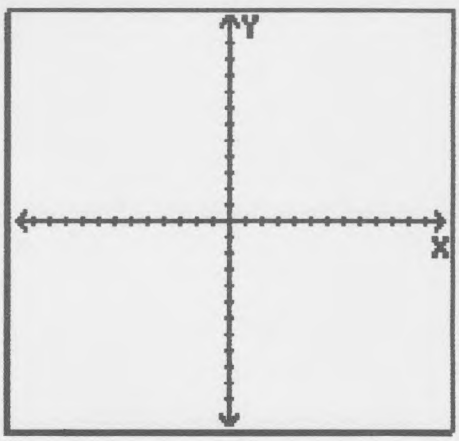
Algebra Rules I Need to Know

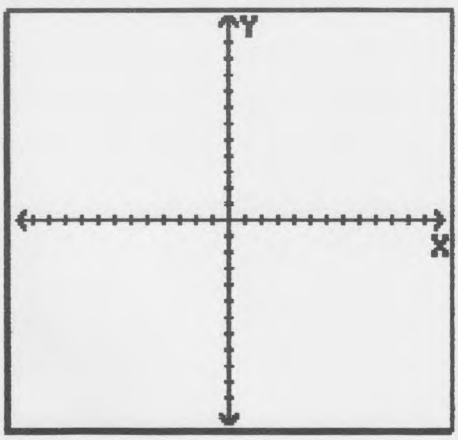
Sketches for New Paths

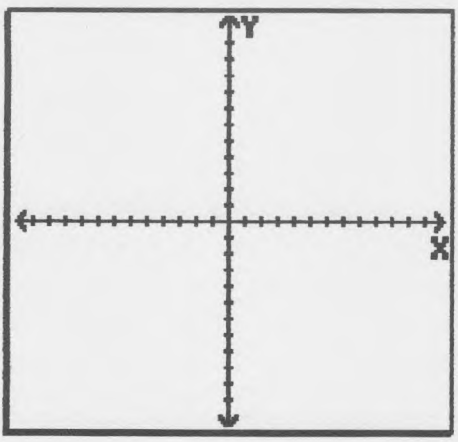




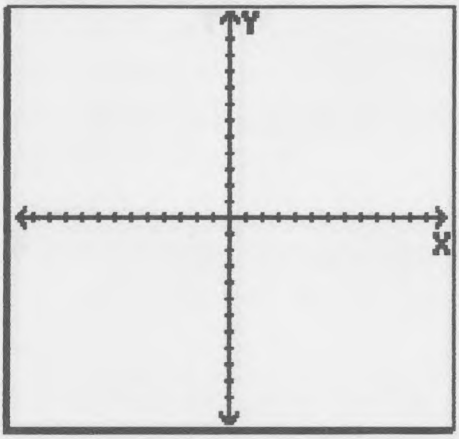


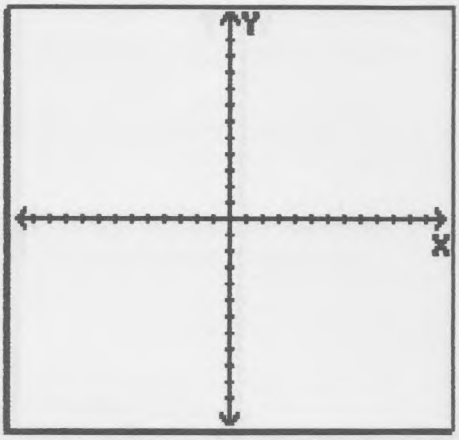


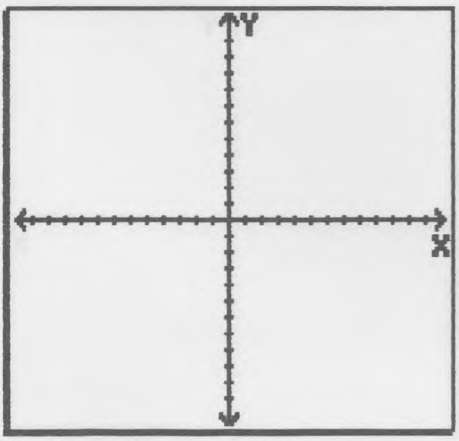


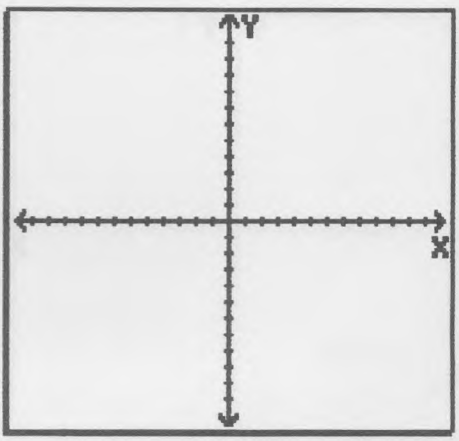


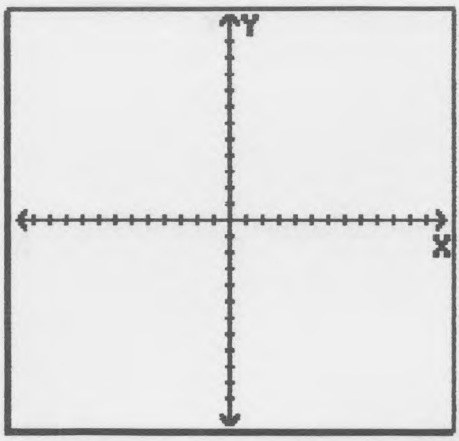
Sketches for New Paths

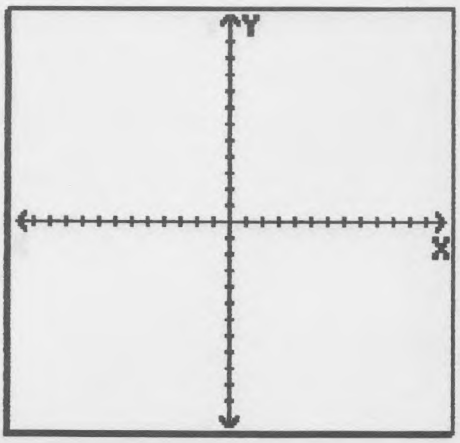












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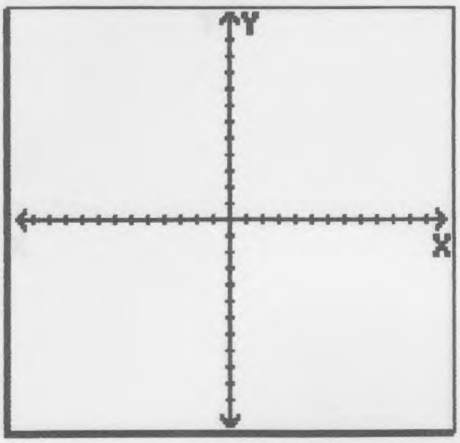
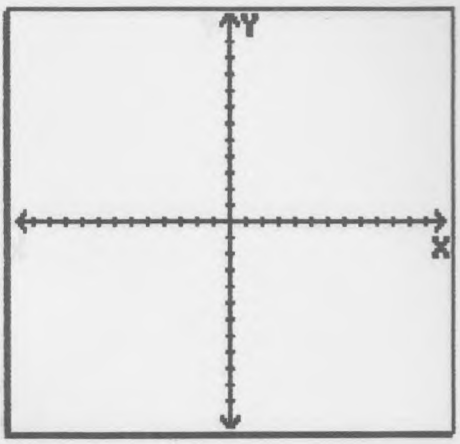
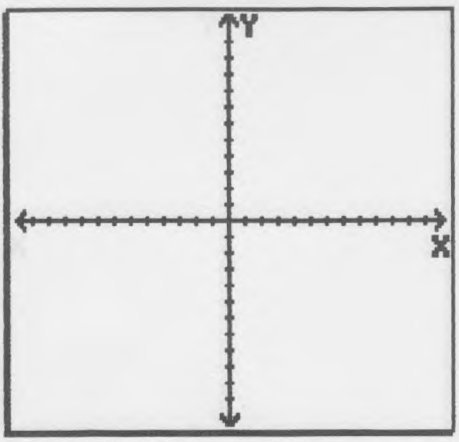
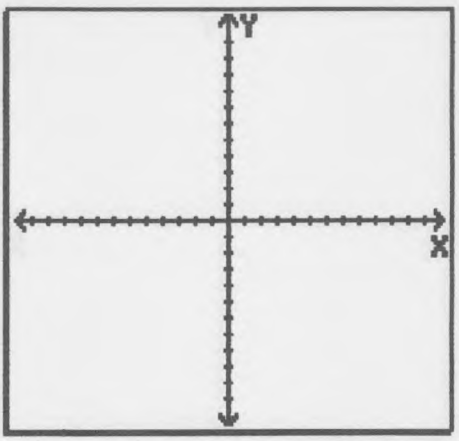
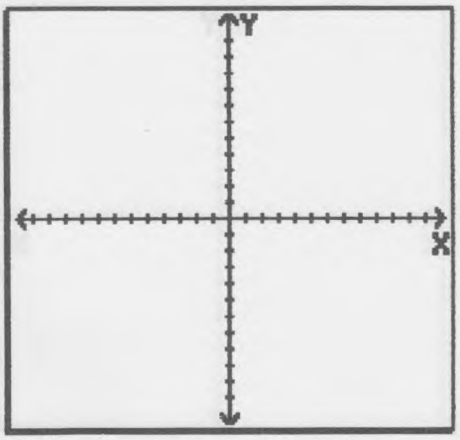
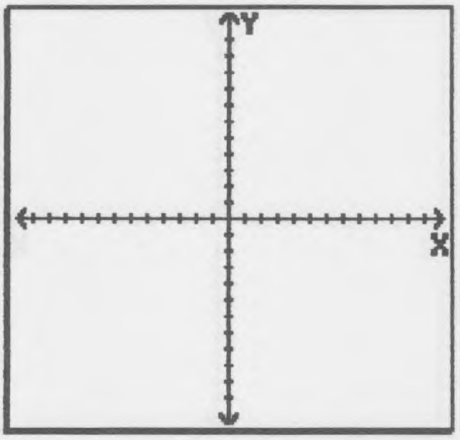




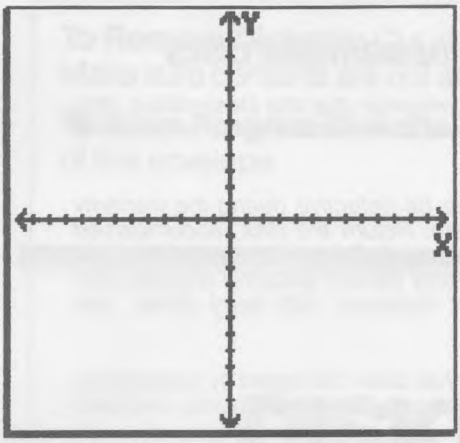


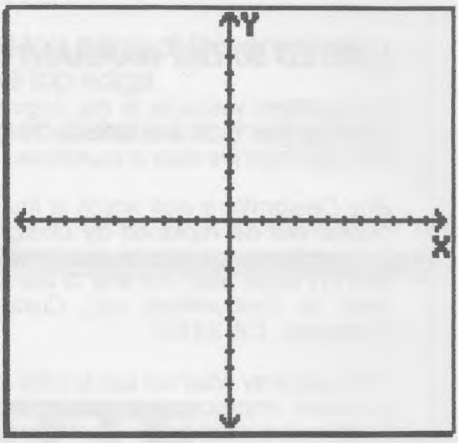


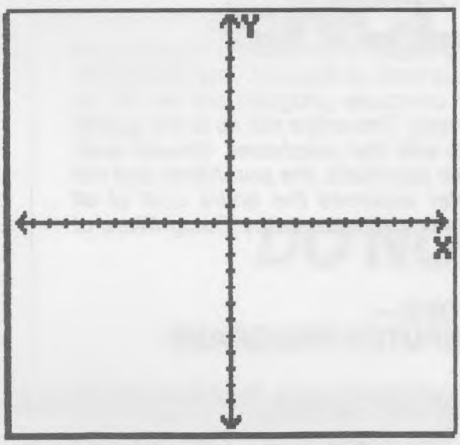


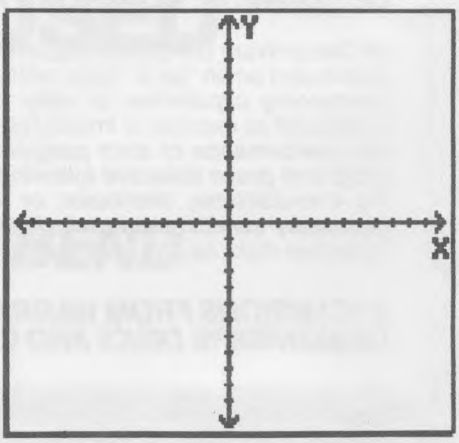


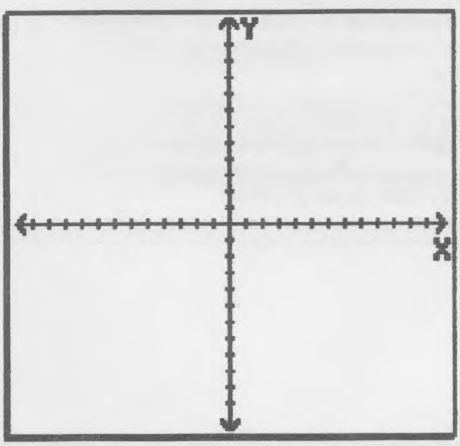
Sketches for New Paths

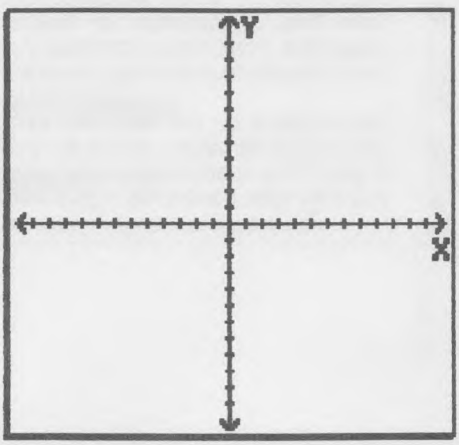












LIMITED 90-DAY WARRANTY – DESIGNWARE DISKS

DesignWare warrants to the original consumer that the DesignWare disk shall be free from any defects in material or workmanship for a period of 90 days from the date of purchase.

Any DesignWare disk which is found to be defective during the warranty period will be replaced by DesignWare. Return the disk, accompanied by proof of date of purchase satisfactory to DesignWare, no later than one (1) week after the end of the warranty period, shipping charges prepaid, to: DesignWare, Inc., Customer Relations, 185 Berry Street, San Francisco, CA 94107.

This warranty shall not apply if the disk has been damaged by negligence, accident, improper or unreasonable use, or by any other causes unrelated to defective materials or workmanship.

DISCLAIMER OF WARRANTIES – DESIGNWARE COMPUTER PROGRAMS

*All DesignWare computer programs and related informational materials are distributed on an "**as is**" basis without warranty of any kind. Any statements concerning capabilities or utility of a computer program are not to be construed as express or implied warranties. **The entire risk as to the quality and performance of such programs is with the purchaser. Should such programs prove defective following their purchase, the purchaser and not the manufacturer, distributor, or retailer assumes the entire cost of all necessary servicing or repair**, (except for replacement by DesignWare of defective disks as provided above).*

EXCLUSIONS FROM WARRANTIES – DESIGNWARE DISKS AND COMPUTER PROGRAMS

*The exclusions and disclaimers in this paragraph apply to all DesignWare disks and DesignWare computer programs. **All implied warranties (including warranties of merchantability and fitness for any particular purpose) with respect to DesignWare products are hereby excluded and disclaimed. DesignWare shall not be liable for incidental and/or consequential damages, including injury to property or persons, that may result from use, malfunction, or failure of DesignWare disks and computer programs**. In all cases, the liability of DesignWare shall be limited to replacement of defective disks as provided above.*

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you. This section regarding warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

To Remove Diskette: Cut along top edge of this envelope. Make sure contents are not at the top edge.

To Store Program Diskette: Insert diskette into the top side of this envelope.

DISKETTE ENCLOSED

DO NOT BEND

Contents:

Mission: Algebra™ Program Diskette
Owner Registration Card
DesignWare™ Product Catalog

"Mission: Algebra teaches a complex subject in a simple entertaining way. It gives you practice in solving algebraic equations [and]...is very good at helping kids visualize algebraic equations."

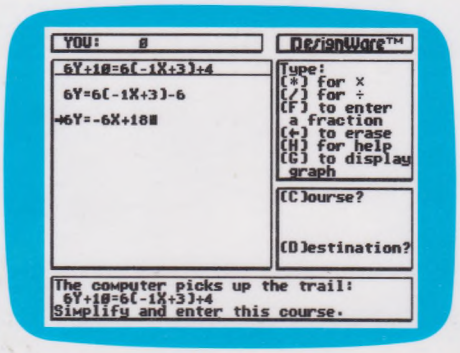
Tony Morris
Contributing Editor, Family Computing Magazine

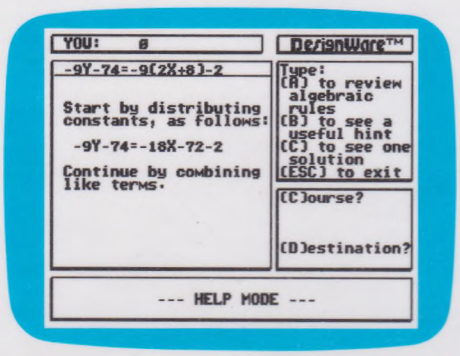
"Mission: Algebra is an exciting way to review and practice linear equations. Students enjoy creating graphics on the screen as they solve equations. Especially motivating is the editing feature which allows students to create their own games and graphics as they review and apply algebraic concepts. Mission: Algebra is an excellent tool for motivation, reward and enrichment."

Julie Torres
Teacher, Grade 8
Rogers Middle School, Moreland School District
San Jose, California

"Mission: Algebra was great! The hi-resolution title graphics were neat and it was fun trying to find the spaceship. Also, I learned a lot trying to solve those linear equations."

Alan Thompson
Age 12
Saratoga, California





Master Linear Equations

Rescue your stranded sister ship by solving linear equations right on the screen. The computer generates thousands of problems and evaluates the correctness of each step you take, regardless of your approach.

Press "H" for Help

Help is available when you need it and built into the program. Review basic algebra rules with examples. See the next logical step in solving the equation. Or review one step-by-step solution to the equation.

Screen appearance may vary depending upon computer used.

DesignWare™

Customer Service & Warranty Information

Customer Service

If you have questions about using a DesignWare program, after reading the manual, please call our toll-free Software Hot Line 800-572-7767 (in California call 415-546-1866 collect). We will be happy to help you. (Software Hot Line hours Monday through Friday 8 a.m.–5 p.m. p.s.t.)

Limited 90 Day Warranty

DesignWare, Inc. warrants to the original consumer purchaser that this DesignWare product shall be free from defects in workmanship and materials for a period of 90 days from the date of purchase. DesignWare will replace free of charge any DesignWare products found to be defective during this warranty period. Please call the toll-free Software Hot Line (800-572-7767) (in California, call 415-546-1866 collect) *before* returning any product to DesignWare to determine if it is a hardware or software problem. By returning your owner registration card, you will speed up the replacement process, should the need arise. Please consult the warranty statement in the back of the activity booklet for more details on DesignWare product warranty.

Back-up Copies

One back-up diskette per product may be purchased directly from DesignWare for $12.00 *if, and only if,* your owner registration card is on file at DesignWare.

Out-of-Warranty Diskette Replacement

If you need to replace your DesignWare program diskette *after* the 90 day warranty period, DesignWare will replace it for $12.00 *if, and only if,* your owner registration card is on file at DesignWare and you send in the damaged or inoperative diskette.

(DETACH AND MAIL OWNER REGISTRATION CARD BELOW)

Owner Registration Card

Purchaser's Name: _____

Street Address: _____

City: _____ **State:** _____ **Zip Code:** _____

Phone: ( ) _____

1. New DesignWare program purchased

- ☐ a. Creature Creator™
- ☐ b. Crypto Cube™
- ☐ c. Math Maze™
- ☐ d. Mission: Algebra™
- ☐ e. Spellicopter™
- ☐ f. Spellagraph™
- ☐ g. Spellakazam™
- ☐ h. States & Traits™
- ☐ i. The Grammar Examiner™
- ☐ j. Trap-a-Zoid™
- ☐ k. Other _____

Name of Program

2. When did you purchase this program? Month _____ Year _____

3. What other DesignWare programs do you own?

- ☐ a. None
- ☐ b. Creature Creator
- ☐ c. Crypto Cube
- ☐ d. Math Maze
- ☐ e. Mission: Algebra
- ☐ f. Spellicopter
- ☐ g. Spellagraph
- ☐ h. Spellakazam
- ☐ i. States & Traits
- ☐ j. The Grammar Examiner™
- ☐ k. Trap-a-Zoid
- ☐ l. Other _____

Name of Program

4. For which brand of computer did you buy the program named in question #1?

- ☐ a. Apple //plus or //e
- ☐ b. Apple //c
- ☐ c. Atari 400, 800, XL Series
- ☐ d. Commodore 64
- ☐ e. IBM PC
- ☐ f. IBM PCjr
- ☐ g. Other _____

Brand of Computer

5. How long have you owned your computer?

- ☐ Less than six months
- ☐ 6–12 months
- ☐ 12–24 months
- ☐ More than 24 months

6. What other brands of educational programs do you own?

- ☐ a. Edufun-Milliken
- ☐ b. Eduware
- ☐ c. CBS
- ☐ d. The Learning Company
- ☐ e. Scarborough
- ☐ f. Spinnaker
- ☐ g. Other _____

Brand Name

7. How many educational programs do you own?

- ☐ a. 1–2
- ☐ b. 3–4
- ☐ c. 5–8
- ☐ d. 8–12
- ☐ e. more than 12

8. Who chose this DesignWare program?

- ☐ a. Mother
- ☐ b. Father
- ☐ c. Other family relative
- ☐ d. Child
- ☐ e. Teacher
- ☐ f. Mother and child
- ☐ g. Father and child
- ☐ h. Both parents and child

9. How did you hear about this DesignWare program?

- ☐ a. Advertisement _____ Name of publication
- ☐ b. Article _____ Name of publication
- ☐ c. Friend
- ☐ d. Teacher
- ☐ e. Saw in the store
- ☐ f. Other _____ Specify

10. Number of children at home

- a. Under 3 years old? _____
- b. 3–5 years old? _____
- c. 6–10 years old? _____
- d. 11–14 years old? _____
- e. 14–18 years old? _____

11. How would you describe your child's skills in this program's subject area?

- ☐ a. Needs to improve—having trouble in this area
- ☐ b. Good—having no trouble in this area
- ☐ c. Excellent—consistently does well in this area

12. What were the most important factors in your decision to buy this DesignWare program?

- ☐ a. Ability to add children's homework into the program
- ☐ b. Award winning program
- ☐ c. Educational value of program
- ☐ d. Entertainment value of program
- ☐ e. Graphics
- ☐ f. Price
- ☐ g. Manual
- ☐ h. Other _____ Please specify

13. What other educational programs are you interested in buying?

- ☐ a. Algebra
- ☐ b. Art
- ☐ c. Biology
- ☐ d. Chemistry
- ☐ e. Foreign Languages
- ☐ f. Geometry
- ☐ g. Grammar
- ☐ h. Math
- ☐ i. Music
- ☐ j. Writing
- ☐ k. Other _____ Please be specific

14. What are the 4 best educational programs you or your child have used?

_____ _____

_____ _____

07

DesignWare™

PLACE STAMP HERE

Customer Service
DesignWare, Inc.
185 Berry Street
San Francisco, CA 94107

Free Subscription to Kids' Computer News

- Keep informed of new products
- Learn new ways to use educational software programs
- Keep informed of special offers from DesignWare
- Each quarterly issue has information for kids as well as parents

Just complete and return your owner registration card within 10 days of purchase, and your family will receive quarterly Kids' Computer News FREE.

07

Mission: Algebra™

11443

Commodore 64™
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